

# Syllabus

## M D. Branch XIV Forensic Medicine

**Paper I:** Forensic Medicine in relation to Medicine, General Surgery, Obstetrics & and Paediatrics.

### GENERAL MEDICINE:

#### CARDIOVASCULAR SYSTEM:

Pericardium – Pericardial effusion, Pneumo and Haemopericardium Pericarditis.  
Cardiomyopathy, myocardial infarction.  
Endocarditis of different types.  
Hypertension and hypertensive heart disease.  
Chronic valvular diseases.  
Congenital heart diseases.  
Latest trends in cardiac investigations and Surgery.

#### RESPIRATORY SYSTEM:

Pleural effusion; pyo, Pneumo, hemothorax.  
Pulmonary hypertension, pulmonary oedema.  
Adult respiratory distress syndrome.  
Hemoptysis.

#### GASTRO INTESTINAL SYSTEM:

Basic principles of gastro intestinal absorption  
Diarrhoea and statorrhoea-causes and types.  
Medical and Surgical aspects of Jaundice.  
Pancreas with diabetes mellitus.

#### CNS:

Blood supply of the brain.  
Clinical examination of a neurological case.  
Pyramidal and extra pyramidal tracts and their lesions.  
Cranial nuclei and their disorders.  
Reticular formation and its various tracts.  
Aphasia, Hydrocephalus.  
Infectious-Meningitis Encephalitis of different types Neurosyphilis.  
Cerebrovascular disorders.  
Epilepsy and other causes of convulsion.  
Peripheral neuritis due to different causes.

## **GENERAL SURGERY:**

Haemorrhage and shock, clinical manifestations and their management.  
Blood transfusion and complications.  
Head Injury and brain.  
Chest injuries and thoracic organs.  
Surgical emergencies of acute abdomen.  
Surgical emergencies of male Genito urinary tract.  
Deaths of the operation table.

## **REPRODUCTIVE MEDICINE AND PAEDIATRICS:**

Development of the genital tract.  
Malformation of the genital tract.  
Sex and inter sexuality.  
Infections of genital tract.  
Injuries of the genital tract.  
Endocrinology of conception.  
Pathology of conception (male and female inferiority).  
Latest trends in treatment of impotence.  
Diagnosis of pregnancy.  
Pathology of pregnancy.  
Parturition.  
Family Planning Methods.  
Accepted birth trauma.  
Foetal circulation.  
Development of respiratory system.  
Normal physical growth, factors influencing growth.  
Milestones for a growing child.  
**Nutritional disorders:** Kwashiorkor, malnutrition, vitamin deficiencies.

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# **SYLLABUS FOR**

## **M.D. Branch XIV – Forensic Medicine**

**Paper II:** Forensic Pathology, Forensic Immunology, Forensic Biochemistry.

### **FORENSIC PATHOLOGY**

#### **GENERAL PATHOLOGY**

1. Inflammation and repair with Enzyme Histo-chemistry.
2. Degenerative changes and disturbances of metabolism.
3. Disturbance of body water, Electrolytes and circulation of blood.
4. Effects of Radiation.
5. Bacterial Diseases.
6. Granulomatous Diseases.
7. Spirochaetal and Sexually Transmitted Diseases including AIDS.
8. Rickettsial and viral Diseases.
9. Fungal Infections.
10. Collagen Diseases.
11. Neoplasms.

#### **SPECIAL PATHOLOGY:**

Special Pathology in relation to systemwise diseases that cause sudden and gradual deaths.

1. Pathology of Rheumatic, Syphilitic, Atherosclerotic Heart diseases.
2. Pathology of Blood Vessels.
3. Brain.
4. Kidneys.
5. Lungs.
6. Gastro-intestinal Tract.
7. Liver.

8. Gall Bladder and Biliary Tract.
9. Anemia, Leukemia and Bleeding Diathesis.

**FORENSIC IMMUNOLOGY:**

1. The immuno system-Cellular Bases.
2. Immunoglobulins-Humoral Mediated System.
3. Cell Mediated Immunity-T.Lymphocyte System.
4. Antigens and Antigenicity.
5. The Immuno Response.
6. Antigen-Antibody reactions.
7. The complement system.
8. Immuno Biology.
9. Blood Group Antigens.
10. The Major Histo compatibility (MHC) Complex and transplantation Immunology.
11. Mechanisms of Immunological injury. Hypersensitivity and Cellular cytotoxicity.
12. Immuno Deficiency Diseases.
13. Precipitation tests, Gel Diffusion tests.  
Haemeagglutination tests, Agglutination-Inhibition tests and other relevant tests like Elisa, RIA etc.
14. Blood group analysis-Variou blood groups and their legal application.
15. Chronological assay of identification of blood groups from the stains of body fluids and body stains fragments.
16. Examination of salivary, Urine and Faecal stains.
17. Seminal Analysis.

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# Forensic Biochemistry

## I. Structure and functions of proteins and Enzymes:

1. Amino Acids.
2. Peptides
3. Proteins : Structure and properties Myoglobin and Hemoglobin and Haemoglobinopathies – Spectroscopic examination.
4. Enzymes : General Properties  
Kinetics  
Mechanism of Action  
Regulation of Activities

## II. Metabolism of Proteins and Amino Acids

1. Conversion of amino acids to specialized products.
2. Porphyrins and Bile pigments.
3. Nucleotides.
4. Metabolism of urine and Purifying nucleotides.
5. Nucleic acid structure and functions.
6. Inheritance of RFLP – Somatic and germ line stability.
7. DNA organization and replication.
8. RNA synthesis, processing and metabolism.
9. Protein synthesis and the genetic code.
10. Regulation of gene expression.

11. Recombinant DNA technology.
12. Collection, Forwarding and authentication of biological samples for DNA – profiling for Forensic purposes.
13. Chromatography.

## **Syllabus For**

### **M.D Branch XIV Forensic Medicine**

Paper III – Forensic Medicine Including Physical Anthropology and Forensic Odontology.

- I. History of Legal Medicine
- II. Inquest
  - a) Legal Procedure at an inquest.
  - b) Comparative study of Medico- legal types of inquest.
  - c) Types of Courts, Criminal Courts, their powers and procedures in Criminal Courts.
  - d) Medical Evidence.
  - e) Law of evidence and Sections of Criminal Procedure Code and Indian Penal Code as related to day to day Medico legal practice.

III . Responsibilities of the Doctors in the Medico-legal examination of the living and the dead

IV. Examination of the body at the scene of crime and procedures for medico-legal autopsy examination.

V. Disposal of the dead and methods to preserve the dead body.

IV Death and medico-legal aspects.

a) Signs and changes after death-

b) Chemistry of death and its utility to establish postmortem interval.

c) Concept of brain death and its relevance.

d) Apparent death – premature burial and its prevention.

e) Diagnosis of cause of death.

f) General inferences to be drawn from the dead body other than cause of death (Trace evidence for identification)

VII . Legal presumption of death and survivorship.

VIII. Classification – types and modes of death.

IX. Violent asphyxia death.

X . Mechanical and Biological Trauma.

a) Firearm wounds.

b) Injuries and Examination of injured.

XI. Special types of trauma.

- a) Automobile injuries
- b) Railway accident
- c) Aviation accident
- d) Mass disaster
- e) Explosion injuries

XII. Death due to Neglect:

- a) Burns   b) Scalds   c) Electricity   d) Lightning
- e) Heat and Cold and   f) Starvation

XIII. Medico – legal aspects of

- a) Potency and impotency
- b) Fertility and Sterility
- c) Legitimacy and Paternity
- d) Artificial insemination

XIV Medico legal aspects of

- a) Virginity
- b) Pregnancy
- c) Delivery
- d) Abortion and its legal aspects  
Before and after Medical termination of pregnancy Act.



XIV. Sexual Offences

XV. Fetus, Neonate infants and children.

- a) Still born and dead born and their causes
- b) Live born and Neonatal deaths
- c) Infanticide
- d) Cot death – Sudden infant death syndrome
- e) Battered Baby Syndrome
- f) Offences against children – age and criminal responsibility – Relevant sections or parts in Indian Penal Code and Criminal Procedure code.

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# Physical Anthropology

## I. Skeletal age : Earlier Years

### A. Criteria of age in the human skeleton:

Postnatal appearance and union of centers of ossification

1. General considerations.
2. The appearance of centers.
3. The union of centers.
4. Appearance and union in specific Bones.

### B. Criteria of age in the Human Skeleton: Prenatal ossification.

### C Criteria of age in the Human Skeleton: Difference due to Race.

## II. Skeletal Age: Later Years I Suture Closure:

1. General considerations and historic notes.
2. Modern studies in suture closure.
3. The reliability of sutures as age criteria.
4. Other age criteria in the skull.

## III. Skeletal age: Later Years all the Pelvis

1. Pubic syphilis
2. The primary elements and the epiphysis of the pelvis.

#### IV. Sexing skeletal remains:

1. General considerations and the age factor.
2. Sex differences in the skull.
3. Sex differences in the pelvis.
4. Sex differences in the long bones.

#### V. The calculation of stature from long bones:

1. Modern studies in stature reconstruction, American Whites and Negroes.
2. Modern studies in stature reconstruction:  
Various Ethnic and Racial groups
3. The use of Immature or Fragmentary long bones in stature reconstruction.
4. The interpretation of statural reconstruction formulae.

#### VI. Race differences in the Human Skeleton:

1. The American Picture: Whites and Negroes.
2. Racial differences in the skull and mandible.
3. Racial differences in the Pelvis.
4. Racial differences in the long bones and scapula.

VII. Additional Data in the direction of Individualisation and limitation:

1. General Note.
2. Date on the skull.
3. The vertebral column and the sacrum.
4. The sternum.
5. The ribs.
6. Long bones Nutrient foramen: Haversian system.
7. Bone Weights.
8. Bone density.
9. Blood typing from bones.
10. Bone Pathology: Amputation.

VIII. From skull to head: Restoration of Physiognomic details:

1. The Relation of the skull to portraits.
2. The Relation of the skull to photographs
3. The Relation of the head from the skull.

IX. The use of radiography in skeletal identification

1. Radiography of the skull.
2. Radiography of other bones.
3. The use of Radiography in mass disaster: Fire:

# **FORENSIC ODONTOLOGY**

1. The tooth and age determination.
2. Dental Identification.
3. Anatomical Identification.
4. Radiological Identification.
5. Archeological Identification.
6. Mass Disaster Identification.
7. Bite Marks.

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# Syllabus For

## M. D. Branch XIV Forensic Medicine

Paper IV Forensic Toxicology, Forensic Psychiatry and Medical Jurisprudence.

### I. TOXICOLOGY:

Definition

Law related to Poisons

- a) Sale of poisons
- b) The poison act
- c) Dangerous drugs Amendment Act
- d) The drugs acts
- e) The drugs and cosmetic rule
- f) Pharmacy Act
- g) Poisoning in India

### II. CLASSIFICATION OF POISON:

- a) Routes of administration – mode of action
- b) Causes modifying the action
- c) Diagnosis in the living and the dead

- d) Duties of the medical practitioners in case of suspected poisoning and treatment.

### III. PRINCIPLES AND APPLICATION IN TOXICOLOGY:

- a) Spectrophotometry
- b) Chromatography
- c) Electrophoresis
- d) Neutron Activation Analysis

### IV INDIVIDUAL POISONS:

Corrosives – acids – inorganic and alkalies – Irritants – Non metallic phosphorous - organophosphorous Halogens – Metallic – Arsenic, antimony, mercury, copper, zinc, Thallium, Bismuth, Iron, Silver, Gold Chromium and their components.

### V. ANIMAL POISONS:

- a) Snakes
- b) Scorpion
- c) Cantharides
- d) Spiders
- e) Wasp
- f) Insects
- g) Poisonous sea animals

#### IV. VEGETABLE POISONS:

Abrus precatorius - Capsicum – colocynth, Ergot – Colchicum, Croton, Calotropis, Gignatea, Lal chitra, Plumbage, Raser, cerebra Theotics.

#### VII. MECHANICAL IRRITANTS:

Diamond powder

Glass Hairs

Animal Hairs

Needles

#### VIII. GASEOUS POISONS AND WAR GASES:

(a) Carbon monoxide; carbon dioxide-sewer gas – Nitrogen monoxide – Hydrogen sulphide – Carbon disulphide sulphur dioxide.

(b) War gases – Lachrymators, Vesicants, Sternutators; Paralysements, Acute lung irritants.

#### IX. DRUG DEPENDENCE AND CEREBRAL POISON:

1. Somniferous poisons

a) Opium alkaloids

b) Pethidine, meperidone and other synthetic narcotic analgesics.

c) Inebriants:

1. Ethyl Alcohol

a) Including organic beverages



- b) Chemical analysis of ethyl alcohol in blood and tissue
- c) Legal views of responsibility of drunkenness
- d) Civil and criminal responsibility of drunkenness
- e) Restrain of habitual drunkenness

3. Methyl Alcohol

4. Amyl AlcoholS

X. Anaesthetic agents – Chloroform, ether – Nitrous oxide – Ethychloride

XI. Sedatives – Barbiturates

Paraldehyde – Bronethol – chloral hydrate

XII. DELIRIUM – TRANQUILLIRERS -

- a) Datura alba and its alkaloids
- b) Hyoscyarmus
- c) Cannabis Indica
- d) Cocaine
- e) Camphor

XIII. PERIPHERAL NERVE POISONS:

- 1. Strychnine
- 2. Gelsetrium

#### XIV. CARDIAC POISONS:

Nicotine – Quinine - Nerium – Lobelia – Cerebra Thevetia –  
Aconite – Digitalis – Paralysants.

#### XV. Paralysants; Curare – conine and allied compounds.

#### XVI. MISCELLANEOUS GROUPS:

- a) Antipyretics - Aspirin – Phenacetin – Paracetamol –  
Amidophyeni – Phenylbutasone.
- b) Aromatic and amino compounds and azodyes, Azoxy  
benzene Azobenzene, Aniline, Toluidine & phenylone  
deaminos.
- c) Aromatic Nitro compounds  
Tinitro toluens  
Nitrobenzone
- d) Coal Tar derivatives  
Benzene, Phenol; Dinitrophenol, Naphthalen petroleum.
- e) Derivatives of batty acids – Amyl nitrite.
- f) Prophydric alcohols, Nitroglycerine.
- g) Food poisoning.
  - 1. Mushroom
  - 2. Bacterial food poisoning
  - 3. Ptomaines poisoning
  - 4. Poisoning by hormones

## XVIII. POISONS ACTING ON THE ENZYMES OF THE BODY

- a) Hydrocyanic acid      b) Organophosphorous.

### FORENSIC PSYCHIATRY:

1. Legal definition and symptomatology of insanity – its classifications and causes.
2. Maliggingering of Feigned insanity.
3. Restraint of the insane and discharge of insane from mental hospital with reference to Indian Lunacy act and Indian mental health Act.
4. Legal responsibility of the insane – Civil and criminal with reference to Indian Lunacy Act and Indian Mental health Act and mental health acts of other countries.
5. Medico – legal aspects of fugue, Trance, Automatism, Somnambulism, Somnolentia Hypnotism, Delirium.

### MEDICAL JURISPRUDENCE:

1. Medical Council of India.
2. Indian Medical Council Act.
3. Code and Medical ethics – Infamous conduct - and disciplinary control of medical practitioners.
4. Privileges of registered practitioners and duties of physician and duties of patients,
5. Malpractice and professional negligence.

6. Physician's defence in cases of negligence.
7. Responsibility of a medical man for negligent acts of nurses or students.
8. The workman's compensation Act.
9. The lepers Act.
10. Life accident and sickness insurance Act.
11. Rights of an unborn child.
12. Corneal grafting Act.

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